

NOVEL COMPOSITIONS FOR USE IN  
BATTERIES, CAPACITORS, FUEL CELLS AND  
SIMILAR DEVICES AND FOR HYDROGEN PRODUCTION

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## ABSTRACT

This invention provides novel chemical compositions, for use as electrode and electrolyte materials and for hydrogen production, methods for making these compositions, and methods of using these compositions in a variety of applications. The new compositions of the present invention comprise: one or more transition metal compounds; aluminum; and either at least one soluble base or at least one soluble electrolyte in contact with the aluminum. The present invention may also comprise one or more elements and/or compounds having high mobility values for electrons, in some applications. This composition is useful as novel electrode/electrolyte components in devices such as batteries, capacitors, fuel cells and similar devices, and also useful in the direct production of hydrogen gas.

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